IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Ulrich Bonne et al.	Confirmation No.: 8299
Serial No.:	10/671,930	Examiner: Keri A. Moss
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For:	PHASED MICRO ANALYZER III, IIIA	
Docket No.:	H0004978-1100.1208101	

PRE-APPEAL BRIEF REQUEST FOR REVIEW

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Lynn Thompson — February 2, 2007
Lynn Thompson — Date

Applicants submit that the Examiner's rejections contain at least the following clear errors and/or omissions of one or more essential elements needed for a prima facie rejection.

Claims 1-10 are rejected as being indefinite for reciting "connected." The Examiner has interpreted "connected" to mean directly or indirectly connected. This interpretation is correct; the claims encompass either direct or indirect connection. MPEP 2173.04 states, "Breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971)." It appears the Examiner is rejecting the claims for being broad, which is not a proper basis for rejection under 112, second paragraph.

Claims 1, 2, 5, 6, 22-24, 28, and 30 are rejected under 35 U.S.C. §103 as being unpatentable over Bonne. The Examiner acknowledges that Bonne fails to teach a plurality of heater elements in a separator, instead teaching a single heating element in the separator, but then asserts that Bonne teach a ratio control mechanism 180 for changing the ratio of concentrator heating elements relative to separator heating elements. Bonne appears to teach a sensor assembly control block 180 that controls the timing of the plurality of heating elements in the concentrator and the single heater in the separator. See column 7, line 36 through column 8, line 37. While the controller 180 of Bonne appears to control the timing of the heating elements in the concentrator, there is no motivation for one of ordinary skill in the art to modify the controller to control a ratio of concentrator heating elements relative to separator heating elements, because only one separator heater is taught, thus no ratio of concentrator heating elements to separator heating elements could be achieved.

The Examiner asserts that Figure 8 of Bonne shows a ratio control mechanism 180 changing the ratio of active concentrator heater elements to separator heating elements from 1:1 to 0:1. Applicants respectfully disagree. Bonne teaches:

> The heater control block 166 first provides a first heater enable signal 194 and a separation heater enable signal 196, as better shown in FIG. 8. The first heater enable signal 194 turns on transistor 168a, and the separation heater enable signal 196 turns on transistor 170.

Emphasis added; see column 7, lines 36-43. Boone appears to teach the controller 180 as turning on the first concentration heater and the single separation heater at the same time, and then sequentially turning on the remaining concentration heaters. See Figure 8. It is unclear upon what the Examiner based the interpretation of Boone teaching changing a ratio of active concentrator heater elements to separator heating elements from 1:1 to 0:1.

Regarding claim 2, the Examiner asserts Boone teaches a micro discharge mechanism located proximate to the first detector, pointing to the outlet below part 264 in Figure 9, and column 4, lines 14-19. Boone appears to teach a single detector 264 in figure 9. Column 4, lines 14-19 of Boone actually teaches:

> The process of forming channel 32 may be similar to that used to form the microbridge system illustrated in U.S. Pat. No. 4,944,035 to Aagardl et al., which is incorporated herein by reference. The channel includes an entry port 34 and an exhaust port 36.

This portion of Boone does not appear to teach anything regarding a micro discharge mechanism proximate the first detector, as is recited in claim 2. The Examiner acknowledges that Boone does not teach a plurality of heater elements in the separator, but asserts that the mere duplication of parts has not patentable significance unless a new and unexpected result is produced. The Examiner then asserts that the use of a plurality of separation heater elements would be expected to provide a more precise separation of components, which would have been obvious.

The claimed plurality of heating elements in the separator are not mere duplicates. The presence of the plurality of separator heating elements in combination with the plurality of concentrator heating elements and the ratio control mechanism provides versatility to the fluid sensor by allowing the ratio of concentrator heating elements relative to separator heating elements to be changed. Changing the ratio allows different concentrator and different separator heating elements to be utilized, which allows different groups of gases to be separated and

detected. For example, see the specification at page 19, line 18 through page 20, line 12. The plurality of heating elements in the separator do provide structural and functional elements of the claimed sensor and are thus not merely duplicates. Further, there is no motivation for one of ordinary skill in the art to modify the sensor of Boone by adding separator heating elements and a ratio control mechanism. The only motivation for making such a change appears to be found in Applicants' specification, which is improper. Additionally, even if one were to duplicate the single separator heating element of Boone, one would not arrive at the claimed fluid sensor because Boone also fails to teach a ratio control mechanism as indicated above.

Claims 1, 2, 22-24, 28, and 30 are rejected as being unpatentable over Geis in view of Manginell. The Examiner acknowledges that Geis fails to teach a separator unit (of any kind) containing a plurality of heater elements and also fails to teach a ratio control mechanism. The Examiner asserts that Manginell teaches a separator comprising a plurality of heating elements. The Examiner has not asserted any reference teaches or suggests a ratio control mechanism. The Examiner asserts that the Manginell separator device provides advantages over conventional gas chromatography (GC) columns, so it would have been obvious to combine the Geis concentrator device with the Manginell separator device to gain the advantages of the faster, low power and sensitivity temperature programming for separation. The Examiner's assertion of why one would be motivated to combine Geis and Manginell appears to be based on Manginell providing advantages over conventional GC separation. The teachings of Geis and Manginell do not suggest or support such a combination. Geis teaches a concentrator for separating a target chemical constituent from a mixture of components on the basis of diffusion coefficient by using alternate forward and backward motion of a temperature profile along a pathway. See Abstract. The purpose of the Geis pump appears to be to move a chemical constituent along a pathway by applying a time-varying temperature profile along the pathway. See Figure 8 and column 7, lines 8-33. Geis does not appear to teach any type of separator, and the time/temperature type concentration achieved by the Geis concentrator appears to operate differently from the gas chromatography separation taught by Manginell, thus there is no motivation for adding the GC type separation device of Manginell to the time/temperature based concentration device of Geis.

Geis teaches their device as "preferentially conveying the target constituent forward" and "particularly advantageous when used in conjunction with a fluid phase detector, for example an ion-mobility spectrometer." See column 3, lines 38-39 and 56-59. Geis thus appears to suggest that the concentrator itself provides the separation of the target constituent. Additionally, even if one were to combine the devices of Geis and Manginell, one would not arrive at the claimed fluid sensor because neither reference appears to teach or suggest a ratio control mechanism as is recited in the claims. The Examiner has not addressed the claimed ratio control mechanism element in the rejection. The combination of Geis and Manginell thus fails to teach or suggest each and every element of the independent claims or the claims dependent thereon.

Claims 3-10, 25-27, and 29 are rejected as being unpatentable over Geis and Manginell in view of Kubisiak. Claims 5-7 are also rejected as being unpatentable over Geis and Manginell in view of Kubisiak and further in view of Geis. The Examiner acknowledges that Geis and Manginell fail to teach a second detector, a flow sensor, or a processor on a separate board from the concentrator, separator and phased heater array. Kubisiak is cited for teaching a detector and flow sensor connected to a processor with switches and control logic. The Examiner asserts that it would have been obvious to modify the devices of Geis and Manginell with the processor and switches of Kubisiak to control the timing of the activation of the heating elements and gain the advantage of determining the phase lag and fluid properties. Kubisiak does not appear to provide what Geis and Manginell lack, thus any combination of Geis, Manginell and Kubisiak also fails to teach each and every element of the claims. Geis appears to teach a device for separating target constituents according to their molecular weights by moving the chemicals along a temperature gradient. Manginell appear to separate chemical constituents based on the chemical equilibria between a mobile phase and a stationary phase in a GC column. Kubisiak appears to teach a device for determining thermal conductivity, thermal diffusivity, specific heat and velocity of a fluid of interest. Applicants submit that there is no motivation for one of ordinary skill in the art to modify the device of Geis or Manginell using the device of Kubisiak because the devices appear to have different functions, different components and different modes of operation. Applicants submit that there is no indication in Geis or Manginell that determining the phase lag and fluid properties, as taught by Kubisiak, would be advantageous or even useful.

In response to Applicants' arguments, the Examiner asserts that Kubisiak teaches that the fluid velocity can be determined by knowing the distance between the heater element and the sensor element as well as the contribution of thermal diffusivity. The Examiner acknowledges that Geis does not claim a specific sensor and thus does not teach a particular distance between the heater elements an a sensor. The Examiner then asserts that the combination of Geis and Manginell creates an apparatus with a determinable distance between the heater elements and the sensor element, and that Kubisiak suggests the use of a flow sensor with a device such as the combined Geis and Manginell device in order to gain the advantages of determining fluid velocity. Applicants do not understand the relevance of the argument because Geis (the primary reference) is not concerned with fluid velocity and the Examiner has not provided any reasoning for why one of ordinary skill in the art would want to modify the Geis device to measure fluid velocity. MPEP 2143.01 III states, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Applicants submit that none of the references provides any indication of the desirability of their combination.

Further, even if one were to combine the teachings of Geis, Manginell and Kubisiak, one would not arrive at the claimed invention. None of the references appear to teach or suggest a fluid sensor having a first plurality of heating elements in a concentrator and a second plurality of heating elements in a separator, or a ratio control mechanism as claimed. Reconsideration and withdrawal of the rejection are respectfully requested.

Respectfully submitted,

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